

Title (en)

Cathode active material for lithium secondary battery, method of fabricating the same, and lithium secondary battery including the same

Title (de)

Kathodenaktivmaterial für eine Lithiumsekundärbatterie, Verfahren zur Herstellung davon und Lithiumsekundärbatterie damit

Title (fr)

Matériau actif de cathode pour batterie secondaire au lithium, son procédé de fabrication et batterie secondaire au lithium le comprenant

Publication

EP 2889935 A1 20150701 (EN)

Application

EP 14003038 A 20140903

Priority

KR 20130167340 A 20131230

Abstract (en)

Provided are a cathode active material for a lithium secondary battery, a method of fabricating the same, and a lithium secondary battery including the same. The cathode active material includes a lithium composite transition metal oxide represented by $\text{Li}_{1+(c-a)/2}\text{Ni}_a\text{Co}_b\text{Mn}_c\text{O}_{2-x}\text{F}_x$ ($0.1\leq c-a\leq 0.4$, $0.13\leq a\leq 0.3$, $0.03\leq b\leq 0.2$, $0.4\leq c\leq 0.6$, $(a+b+c)+(1+(c-a)/2)=2$, $0\leq x\leq 0.15$, $1\leq a/b\leq 6$, $1.9\leq c/a\leq 4.0$, and $0.04\leq b/(a+b+c)\leq 0.25$), and layer-structured Li_2MnO_3 . Since the lithium secondary battery including the cathode active material has a large capacity and generates less gas, lifespan characteristics and high rate capability are significantly improved, and especially voltage variation during charging and discharging operations is small.

IPC 8 full level

H01M 4/36 (2006.01); **H01M 4/505** (2010.01); **H01M 4/525** (2010.01); **H01M 4/58** (2010.01); **H01M 4/02** (2006.01); **H01M 10/052** (2010.01)

CPC (source: CN EP KR US)

H01M 4/362 (2013.01 - CN EP US); **H01M 4/505** (2013.01 - CN EP KR US); **H01M 4/525** (2013.01 - CN EP KR US); **H01M 4/58** (2013.01 - KR); **H01M 4/582** (2013.01 - CN EP US); **H01M 10/052** (2013.01 - CN EP KR US); **H01M 2004/021** (2013.01 - CN EP US); **H01M 2004/028** (2013.01 - US); **Y02E 60/10** (2013.01 - EP); **Y02T 10/70** (2013.01 - US)

Citation (applicant)

KR 20110076955 A 20110706 - ENVIA SYSTEMS INC [US]

Citation (search report)

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- [Y] US 2010086854 A1 20100408 - KUMAR SUJEET [US], et al
- [A] US 2011052981 A1 20110303 - LOPEZ HERMAN A [US], et al
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- [Y] JIANMING ZHENG ET AL: "Improved electrochemical performance of $\text{Li}[\text{Li}_{0.2}\text{Mn}_{0.54}\text{Ni}_{0.13}\text{Co}_{0.13}]\text{O}_2$ cathode material by fluorine incorporation", ELECTROCHIMICA ACTA, vol. 105, 10 May 2013 (2013-05-10), pages 200 - 208, XP055095378, ISSN: 0013-4686, DOI: 10.1016/j.electacta.2013.04.150

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EP3817105A1; CN108682808A; CN106904652A

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Designated extension state (EPC)

BA ME

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EP 2889935 A1 20150701; **EP 2889935 B1 20170308**; CN 104752700 A 20150701; CN 104752700 B 20201009; JP 2015130343 A 20150716; JP 6583983 B2 20191002; KR 102152366 B1 20200904; KR 20150078177 A 20150708; US 2015188135 A1 20150702; US 9871250 B2 20180116

DOCDB simple family (application)

EP 14003038 A 20140903; CN 201410503918 A 20140926; JP 2014265200 A 20141226; KR 20130167340 A 20131230; US 201414478580 A 20140905